UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/508,771	03/16/2000	JINKO KIMURA	500.38296X00	8406

24203 7590 04/16/2002

GRIFFIN & SZIPL, PC
SUITE PH-1
2300 NINTH STREET, SOUTH
ARLINGTON, VA 22204

EXAMINER
CLARKE, YVETTE M

ART UNIT	PAPER NUMBER
1752	15

DATE MAILED: 04/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

(15)

Office Action Summary	Application No.	Applicant(s)	
	09/508,771	KIMURA ET AL.	
	Examiner	Art Unit	
	Yvette M Clarke	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19 and 21-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) *1-19 and 21-35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 March 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

This is written in reference to application number 09/508771 filed on March 16, 2000

Response to Amendment

1. The amendment filed on February 22, 2002 has been entered and fully considered.

2. Claims 1-19 and 21-35 are currently pending.

3. The examiner notes that the claims as written do not require fish eyes to be present. The specification indicates that 5 fish eyes/m2 or less is required. The test results presented with the filed amendment as indicate that the said fish eyes are not required as long as the thickness of the resin layer is within the claimed range. The following rejections are based on the broadest interpretation of the claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-5, 7-10, 13-14, 18-19, 21-25, 28-29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hilger (US 4698292) in view of Fifield (DE 3825782A). Hilger teaches a photopolymerizable recording material comprising a transparent support film, a thermoplastic photopolymerizable photoresist layer and a flexible covering film on the exposed surface of the photoresist layer (abstract). Hilger teaches that the said support preferably has a thickness in the range of 15-30 μm, and

the covering film has a thickness from about 5-25 μm. The principal constituents of the photopolymerizable layer comprise a thermoplastic polymeric binder, polymerizable compounds, which are preferably (meth)acrylic acid esters of polyhydric aliphatic hydroxyl compounds and a photoinitiator. The thickness of the layer is generally in the range of between 10-100 μm, most preferably between 15-70 μm. Example 1 exemplifies a 25 μm thick polyethylene terphthalate film coated with a photopolymerizable layer having the a composition comprising a terpolymer of n-hexylmethacrylate, methacrylic acid and styrene which has a molecular weight of about 35, 000. A 12 μm thick polyethylene film was then applied by laminating to the surface of the dry film layer. The laminate obtained was stored in a large-size roll. Although, example 1 exemplifies the use of a 40 μm thick photopolymerizable layer, Hilger teaches that the preferred range is between 15-70 μm. It would have been obvious to one of ordinary skill in the art to use a thickness within the preferred to make the photopolymerizable layer. It is the examiner's position that between 15-30 μm, the limitations of the instant claims are meet.

Hilger teaches all the limitations of the claims except it fails to lack explicit details pertaining to the protective or covering film. The prior art of Fifield teaches that a covering film, which contains less gell and fewer inclusions would reduce the number of indentations in the resist and form a roll that is more even. The examiner is of the position that gell and inclusions are analogous to fish eyes as defined by the applicant. One of ordinary skill in the art would have been motivated by the teachings of Fifield to make the covering layer of Hilger have less gell and fewer inclusions to make the roll of

Hilger more even and the resist have a reduced number of indentations. It would have been obvious to one of ordinary skill to make as few inclusions as possible and the determination of optimal results can be achieved by routine experimentation. It is the examiner's position that when the covering of Hilger is optimized as taught by Fifield, the final product will inherently meet the limitation of the claimed invention in regard to the diameter and number of fish eyes per m2.

6. Claims 1-10, 13-19, 21-25 and 28-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi (US 4360582) in view of Fifield (DE 3825782). Taguchi teaches a photopolymerizable element comprising a layer of a photopolymerizable composition and a film support made of a transparent material. In order to produce a resist image on a substrate, the photopolymerizable layer is applied to a substrate, exposed imagewise to actinic radiation and developed to form an image (c. 3, l. 20-46). The said element may further comprise a strippable protective film provided on the other surface of the photopolymerizable composition layer for preventing blocking at the winding step and adhesion of dust during handling (c. 3, l. 62-68). Taguchi teaches that the thinner the photopolymerizable layer, the more the resolution is improved (c. 9, l. 17-19). Example 1 exemplifies a solution comprising polymethyl methacrylate as an organic binder, a photopolymerization monomer, and a photoinitiator coating onto a 50 μ-thick polypropylene film and dried to form a photopolymerizable layer having a dry thickness of 10 μ. The said layer was then laminated onto a 20 μ–thick polymethyl methacrylate support film. The polypropylene film was then stripped and the said layer was laminated to a treated copper-clad epoxy

resin fiber glass substrate. The formed element was then exposed to actinic rays and developed to form a negative image. An etching process was then preformed to remove the copper at the areas unprotected by the resist image (c. 16, l. 30-c. 17, l. 17). Taguchi teaches all the limitations of the claims except it fails to lack explicit details pertaining to the protective film. The prior art of Fifield teaches that a covering film, which contains less gell and fewer inclusions would reduce the number of indentations in the resist and form a roll that is more even. The examiner is of the position that gell and inclusions are analogous to fish eyes as defined by the applicant. One of ordinary skill in the art would have been motivated by the teachings of Fifield to make the protective layer of Taguchi have less gell and fewer inclusions to make the roll more even and the resist have a reduced number of indentations. It would have been obvious to one of ordinary skill to make as few inclusions as possible and the determination of optimal results can be achieved by routine experimentation. It is the examiner's position that when the protective film of Taguchi is optimized as taught by Fifield, the final product will inherently meet the limitation of the claimed invention in regard to the diameter and number of fish eyes per m2.

7. Claims 12 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi (GB 2049072) in view of Fifield (DE 3825782) as applied to claims 1-10, 13-19, 21-25 and 28-35 above, and further in view of Hoffmann (US 4710446). Taguchi as discussed above teaches a photopolymerizable layer comprising a photopolymerization initiator. Taguchi discloses that the kind of initiator to be used is not particularly critical and any known photopolymerization initiator can be used (c. 6, l.

42-45). It is the examiner's position that 2,4,5-triarylimidazole dimer is a well known and conventional photoinitiator. This position is supported by the teachings of Hoffmann which teach that photoinitiator systems conventionally used for resist layer include benzophenone, 2,4,5-triarylimidazole dimmers and mixtures thereof (c. 6, l. 9-27).

8. Claims 11 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi (GB 2049072) in view of Fifield (DE 3825782) as applied to claims 1-10, 13-19, 21-25 and 28-35 above, and further in view of Hatanaka (US 6133343). Taguchi as discussed above teaches a photopolymerizable layer comprising a photopolymerizable monomer. Taguchi discloses that the kind of monomer to be used is an ethylenically unsaturated compound having at least 2 unsaturated bonds in their molecule. It is the examiner's position that one of ordinary skill would have been motivated to use any ethylenically unsaturated monomer, which has at least 2 unsaturated bonds in the taught composition of Taguchi. It is well known in the art that bisphenol A polyoxyalkylene dimethacrylates are polyfunctional compounds. This position is supported by the teachings of Hatanaka which teach that 2,2'di(4-methacryloxypolyethoxyphenyl) propane, which is a type of Bisphenol A polyoxyalkylene dimethacrylate and trimethylolpropanetri(methyl)acrylate are poly-functional (meth)acrylates (c. 6, l. 9-28). Taguchi teaches that trimethylolpropane tri(methyl)acrylate is a suitable monomer. One of ordinary skill in the art would have been motivated to substitute a 2,2'di(4-methacryloxypolyethoxyphenyl) propane of Hatanaka for the trimethylolpropane tri(methyl)acrylate of Taguchi and expect

reasonably similar results. Motivation is based on the concept that similar compounds will produce reasonably similar results.

Response to Arguments

9. Applicant's arguments filed February 20, 2002 have been fully considered but they are not persuasive. Applicants argue that the cited prior art reference to Hilger (US '292) is not the same field of endeavor as the claimed invention. Applicants further argue that the examiner has provided no motivation to combine the teaching of Hilger and Fifield (DE '782) and Taguchi (US '582) and Fifield (DE '782). The examiner is of the position that the claims as written pertain only to a photosensitive film. Hilger and Taguchi both teach photosensitive materials which meet the limitations of the claimed photosensitive film. The examiner reminds the applicant that the motivation of the prior art does not have to be that of the applicants.

10. As discussed above, Hilger teaches a photopolymerizable recording material comprising a transparent support film, a thermoplastic photopolymerizable photoresist layer and a flexible covering film on the exposed surface of the photoresist layer (abstract). Hilger exemplifies in example 1 the use of 12 μm thick polyethylene film applied by laminating to the surface of the dry film layer as a protective layer. Taguchi teaches that appropriate materials for the taught protective film include polyethylene terephthalate, polyethylene film, polypropylene film and polyethylene laminated paper (c. 10, l. 15-23). Fifield teaches the use of a low quality LDPE (low density polyethylene) which contains less gell and fewer inclusions would reduce the number of indentations in the resist and form a roll that is more even. The examiner maintains the

position that one of ordinary skill in the art would have been motivated by the teachings of Fifield to make the covering layer of Hilger and the protective film of Taguchi of a low quality LDPE film which contains less gell and fewer inclusions in order to reduce the number of indentations in the resist. It would have been obvious to one of ordinary skill to make as few inclusions as possible and the determination of optimal results can be achieved by routine experimentation. It is the examiner's position that when the covering of Hilger and the protective film of Taguchi are optimized as taught by Fifield, the final product will inherently meet the limitation of the claimed invention in regard to the diameter and number of fish eyes per m2. The examiner has failed to find evidence that when the prior art is optimized as taught by Fifield, it does not inherently meet the limitations of the instant claims. The examiner believes that the cited references and the claimed invention are all photosensitive materials and are considered to be analogous in the art.

11. The examiner notes that the amendment to claims 1 and 19 introduces a process limitation that does not further define the claimed product. Consequently, the burden shifts to Applicant to provide evidence of an unobvious difference between the claimed product and the prior art. Furthermore, "The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In re Fessmann, 180 USPQ 324,326 (CCPA 1974), see MPEP 2113.

12. Applicants further argue that the prior art reference of Hatanaka is non-analogous to the field of endeavor. The examiner has relied upon the said reference to

merely teach that it is well known in the art of resinous compositions that bisphenol A polyoxyalkylene dimethacrylates are polyfunctional compounds. The intended use of the said reference has no bearing on the disclosure of Hatanaka that 2,2'di(4-methacryloxypolyethoxyphenyl) propane, which is a type of Bisphenol A polyoxyalkylene dimethacrylate, and trimethylolpropanetri(methyl)acrylate are poly-functional (meth)acrylates (c. 6, l. 9-28).

13. The examiner maintains the rejections of record.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

15. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette M Clarke whose telephone number is 703-305-0589. The examiner can normally be reached on Monday-Thursday 7-5:30.

17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Baxter can be reached on 703-308-2303. The fax phone numbers for

the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

18. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193.

ymc
April 11, 2002

JANET BAXTER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700